



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/561,232 | 04/23/2007 | Kook-Heui Lee | 50319 | 1643 |
| <div>1609 7590 12/31/2009 ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P. 1300 19TH STREET, N.W. SUITE 600 WASHINGTON,, DC 20036</div> | | | | |
| EXAMINER | | | | |
| GU, YU | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2617 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 12/31/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/561,232

Applicant(s)

LEE ET AL.

Examiner

YU (Andy) GU

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/09/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/CD)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Status of Claims

1. Applicant's amendment, filed on 9/29/2009, has been entered and carefully considered. Claims 1-2 and 17 have been amended. Accordingly, claims 1-17 are pending.

Continued Examination under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/29/2009 has been entered.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. **Claims 1-3, 5-6 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 20040157640 A1 Pirskanen et al. (hereinafter Pirskanen) in view of US 6047071 A Shah et al. (hereinafter Shah).

Regarding **claim 1** (currently amended), Pirskanen *discloses a method for initiating uplink signaling proactively by a UE receiving a multimedia multicast/broadcast service (MBMS), the UE receiving information over a MBMS control channel, the method* (see at least paragraph [0005]) *comprising steps of:*

- *listening the MBMS control channel* (see at least paragraph [0011] and [0014], where Pirskanen discloses the CELL_FACH mode, a state well known in the art in which a UE listens to a common control channel; the CELL_PCH mode, a state well known in the art in which a UE listens to a paging channel; and the CELL_DCH mode, a state well known in the art in which a UE listens to a dedicated control channel);
- *initiating an uplink signaling* (e.g. MBMS Group Membership Report) *according to the information* (e.g. MBMS notification "Counting") *received over the MBMS control channel* (see at least Figure 2 item 6 and 7 and paragraph [0054]-[0055]);
- *and receiving a response message* (e.g. the MBMS notification "Counting Stopped") *in response to said uplink signaling*; (see at least Figure 2 item 7 and paragraph [0057], where Pirskanen disclose the notification "Counting Stopped" as being responsive to receiving the MBMS Group Membership Report).

Pirskanen further discloses the point-to-point channels maybe used to transmit MBMS data (for each UE) if there is less than x UEs joined in a cell (see at least Pirskanen 0007). Therefore, this disclosure raises the needs for the establishment of a point-to-point channel between the UE and the network. However, Pirskanen does not specifically disclose wherein the information received over the MBMS control channel comprises an indication for establishing a point-to-point channel used by the MBMS. In an analogous art, Shah discloses a method for establishing a traffic channel: transmitting instruction (e.g. channel assignment message) from a base station to a mobile to set up a traffic channel (see at least column 10 lines 62-67). It would have

been obvious to a person of ordinary skill in the art at the time of the invention to modify Pirskanen in view of Shah to have the network sending indication to the UE to establish the point-to-point channel in order to facilitate efficient management of MBMS services.

Regarding **claim 2** (currently amended), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen further discloses:

- *wherein the information received over the MBMS control channel comprises at least one of an indication further comprises indication for UE counting (see at least paragraph [0011] and [0014]).*

Regarding **claim 3** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen further discloses:

- *wherein said UE is in CELL_FACH, CELL_PCH or URA_PCH mode (see at least paragraph [0011] and [0014]).*

Regarding **claim 5** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen further discloses:

- *wherein modes that said UE may be in comprises the UE in IDLE mode (see at least paragraph [0006] and [0008]).*

Regarding **claim 6** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1** or **5**. Pirskanen further discloses:

- *wherein for the UE in IDLE mode, a message included in said uplink singling is an RRC (radio resource control) Connection Request message (see at least paragraph [0017]).*

Regarding **claim 17** (previously presented), Pirskanen discloses *a multimedia multicast/broadcast service (MBMS) user equipment (UE) for initiating uplink signaling proactively, the UE receiving information over a MBMS control channel, the UE comprising:*

- *a receiver listening to the MBMS control channel* (see at least paragraph [0011] and [0014], where Pirskanen discloses the CELL_FACH mode, a state well known in the art in which a UE listens to a common control channel; the CELL_PCH mode, a state well known in the art in which a UE listens to a paging channel; and the CELL_DCH mode, a state well known in the art in which a UE listens to a dedicated control channel) *and receiving a response message* (e.g. MBMS notification "Counting Stopped") *in response to an uplink signaling* (e.g. MBMS Membership Report) (see at least paragraph [0055]-[0057]);

Pirskanen further discloses a controller (e.g. as inherent component the UE), and that the UE *initiating an uplink signaling* (e.g. MBMS Group Membership Report) *according to the information* (e.g. MBMS notification "Counting") *received over the MBMS control channel* (see at least Figure 2 item 6 and 7 and paragraph [0054]-[0055]).

Pirskanen further discloses the point-to-point channels maybe used to transmit MBMS data (for each UE) if there is less than x UEs joined in a cell (see at least Pirskanen 0007). Therefore, this disclosure raises the needs for the establishment of a point-to-point channel between the UE and the network. However, Pirskanen does not specifically disclose *wherein the information received over the MBMS control channel comprises an indication for establishing a point-to-point channel used by the MBMS.* In

an analogous art, Shah discloses a method for establishing a traffic channel: transmitting instruction (e.g. channel assignment message) from a base station to a mobile to set up a traffic channel (see at least column 10 lines 62-67). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Pirskanen in view of Shah to have the network sending indication to the UE to establish the point-to-point channel in order to facilitate efficient management of MBMS services.

5. **Claims 4 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view of US 20030236085 A1 Ho (hereinafter Ho).

Regarding **claim 4** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1 or 3**. Pirskanen does not specifically disclose *wherein for the UE that is in CELL_FACH, CELL_PCH or URA_PCH mode, a message included in said uplink signaling is a Cell Update message*. However, in a related field of endeavor, Ho discloses a cell update message sent by a UE (see at least Ho paragraph [0014]) as part of a periodical cell update procedure. It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Ho in order for the UE to exchange information with the network.

Regarding **claim 9** (previously presented), Pirskanen as modified by Shah and Ho discloses the limitations as shown in the rejection of **claim 1 or 3, and 4**. Pirskanen further discloses that the number of UEs associated with a service is used in the determination of whether to use a PTP channel or a PTM channel (i.e. *MBMS channel parameters*) for communication with the UE. Pirskanen does not specifically disclose

wherein the value for the field named "Reason for cell update" in the Cell Update message is set as "For MBMS UE counting". However, in a related field of endeavor, Ho discloses a cell update message sent by a UE (see at least Ho paragraph [0014]) as part of a periodical cell update procedure. It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Ho to set the reason for cell update message as *"For MBMS UE counting"* in order to facilitate the reporting of the numbers of UEs associated with the network.

6. **Claims 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah and Ho, and further in view of US 6782274 B1 Park et al. (hereinafter Park).

Regarding **claim 7** (previously presented), Pirskanen as modified by Shah and Ho disclose the limitations as shown in the rejection of **claim 1** or **3**, and **4**. Pirskanen does not specifically disclose *wherein a value for a field named "Reason for cell update" in the Cell Update message is set as "For MBMS channel parameters"*. However, in a related field of endeavor, Park discloses using cell update message to obtain a response message (i.e. cell update confirm message) comprising at least information element related to the physical channel information (e.g. channel parameters) regarding a network (see at least Park column 12 lines 57-67). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen and Ho, to set the reason for cell update message as *"For MBMS channel parameters"* in order to obtains a response message (i.e. cell update confirm message) that contains the channel information necessary for further communication between the UE and the network.

Regarding **claim 8** (previously presented), Pirskanen as modified by Shah and Ho discloses the limitations as shown in the rejection of **claim 1 or 3**, and **4**. Pirskanen further discloses whether to use a PTP channel or a PTM channel (i.e. *MBMS channel parameters*) for communication the UE depends network (e.g. operator resource) (see at least paragraph [0006]). Pirskanen does not specifically disclose *wherein the value for the field named "Reason for cell update" in the Cell Update message is set as "For MBMS PtP mode"*. In a related field of endeavor, Park discloses using cell update message to obtain a response message (i.e. cell update confirm message) comprising at least information element related to the physical channel information (e.g. channel parameters) regarding a network (see at least Park column 12 lines 57-67). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen and Ho, to set the reason for cell update message as *"For MBMS PtP mode"* in order to obtains a response message (i.e. cell update confirm message) that contains the channel information (e.g. using PtP or PtM) necessary for further communication between the UE and the network.

7. **Claims 10 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view of US 7433334 B2 Marjelund et al. (hereinafter Marjelund).

Regarding **claim 10** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1 or 5**, and **6**. Pirskanen does not specifically disclose *wherein a value for a field named "Reason for connection establishment" in the RRC Connection Request message is set as "MBMS channel*

parameter". However, Pirskanen ~~however~~ discloses either a PtP channel or a PtM channel can be used for data communication with the UE (see at least paragraph [0005]). In a related field of endeavor, Marjelund discloses the cause for establishing a link (i.e. the reason) are mandatory information elements included in a RRC connection request message (see at least Marjelund column 7 lines 48-55). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Marjelund to set the reason for connection establishment in the RRC connection request as "MBMS channel parameter", in order to obtain a response (e.g. a RRC connection setup message, which is well known in the art) that contains information regarding the channel to be used for further communication.

Regarding **claim 12** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of claim **1 or 5, and 6**. Pirskanen does not specifically disclose *wherein the value for the field named "Reason for connection Establishment" in the RRC Connection Request message is set as "For MBMS UE counting"*. Pirskanen however discloses requesting RCC connection establishment in order to facilitate the counting of UEs (see at least paragraph [0017]). In a related field of endeavor, Marjelund discloses the cause for establishing a link (i.e. the reason) are mandatory information elements included in a RRC connection request message (see at least Marjelund column 7 lines 48-55). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Marjelund to set the reason for connection establishment in the RRC connection request as "For MBMS UE counting", in order to facilitate the counting of UEs. .

8. **Claims 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view US 7031694 B2 Koulakiotis et al. (hereinafter Koulakiotis), and yet further in view of Marjelund.

Regarding **claim 11** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1 or 5**, and **6**. Pirskanen does not specifically disclose *wherein the value for the field named "Reason for connection establishment" in the RRC Connection Request is set as "MBMS PtP mode"*. Pirskanen however discloses either a PtP channel or a PtM channel can be used for data communication with the UE (see at least paragraph [0005]). In a related field of endeavor, Koulakiotis discloses providing user the option to receive information (e.g. MBMS data) on dedicated channel (i.e. PtP) or a common channel. (i.e. PtM). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Koulakiotis to give a user the option to choose between PtP or PtM in order to create different business modes (see at least Koulakiotis column 2 lines 18-26). Additionally, Marjelund discloses the cause for establishing a link (i.e. the reason) are mandatory information elements included in a RRC connection request message (see at least Marjelund column 7 lines 48-55). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Koulakiotis, and further in view of Marjelund to set the reason for connection establishment in the RRC connection request as *"MBMS PtP mode"*, in order to request a PtP mode connection.

9. **Claims 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view of US 20020110106 A1 Koo et al. (hereinafter Koo) and US 20030003895 A1 Wallentin et al. (hereinafter Wallentin). Regarding **claim 13** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen further discloses a connected mode CELL_FACH mode (see at least paragraph [0011]). Pirskanen still further discloses the reason for uplink signaling is for MBMS UE counting (see at least Figure 2 item 6 and 7). Pirskanen is however silent as to the limitation *sending a downlink signaling by the RNC to make the UE enter CELL_FACH state if a reason for sending said uplink signaling included in said uplink signaling is set as "For MBMS UE counting"*. In a related field of endeavor, Koo discloses sending a downlink signaling by a RNC to make the UE enter a connected mode from an idle mode (see at least Koo paragraph [0026]); and Wallentin discloses that in CELL_FACH mode, the UE continuously listens to a common channel (see at least Wallentin paragraph [0016]). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Koo and Wallentin to put the UE in CELL_FACH after sending uplink signaling for MBMS UE counting, in order to facilitate subsequent processing (e.g. receiving a confirmation, see at least Pirskanen Figure 2 item 8).
10. **Claims 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view of Koulakiotis, and yet further in view of Marjelund and US 6850759 B2 Van Lieshout et al. (hereinafter Van).

Regarding **claim 14** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen is silent as to *sending a Radio Link Establishment Request message by a SRNC to a DRNC if an Iur interface exists and the reason for cell update included in said uplink signaling is set as is "For MBMS PtP mode"*.

In a related field of endeavor, Koulakiotis discloses providing user the option to receive information (e.g. MBMS data) on dedicated channel (i.e. PtP) or a common channel. (i.e. PtM). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Koulakiotis to give a user the option to choose between PtP or PtM in order to create different business modes (see at least Koulakiotis column 2 lines 18-26). Additionally, Marjelund discloses the cause for establishing a link (i.e. the reason) as mandatory information elements included in a RRC connection request message (see at least Marjelund column 7 lines 48-55). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view of Koulakiotis, and further in view of Marjelund to set the reason for connection establishment in the RRC connection request as "*MBMS PtP mode* ", in order to request a PtP mode connection.

Additionally, in a related field of endeavor, Van discloses a SRNC and a DRNC and a Iur interface between the SRNC and DRNC (see at least Figure 1 and column 2 lines 30-34, 40-43 and 53-62, where Van further teach that a SRNC is in charge of the radio connection with the UE, and has full control of the radio connection within the RAN, and is connect to the core network, where as a DRNC supports the SRNC by supplying radio resources to the UE). Therefore, in order to establish a PtP mode channel with a

UE served by a DRNC controlled by a SRNC, It would have been obvious to a person of ordinary skill in the art to modify Pirskanen, Koulakiotis and Marjelund in view of Van to send a radio link establishment request by the SRNC to the DRNC to request the DRNC to setup a PtP channel with the UE.

Regarding **claim 15** (previously presented), Pirskanen, Shah, Koulakiotis, Marjelund and Van discloses the limitations as shown in the rejection of **claim 1** and **14**. Pirskanen does not specifically disclose *adding the UE into the context of the MBMS by the DRNC to by adding a number of the participating UEs by 1 after receiving the Radio Link Establishment Request message, and if the increase of the number of participating UEs makes a channel type of the MBMS change from PtP to PtM, the DRNC sending a Radio Link Establishment Failure message to the SRNC.*

Pirskanen However discloses that the decision to serve the UE either via PtP or PtM channel mode as dependent on the number of UE supported by a cell, and that there could be a threshold value x used to make such decision (see at least paragraph [0007], where Pirskanen teach if the number of UEs is less than x, then use PtP, or else use PtM). Pirskanen further discloses the counting of UE (see at least Figure 2). It would have been obvious to a person of ordinary skill in the art that an increment of number of UEs by 1 could make the RNC to switch from PtP mode to PtM mode, thus the RNC would fail to serve the UE requesting the PtP type service. Pirskanen however does not mention a SRNC or DRNC.

Van discloses a SRNC and a DRNC and a Iur interface between the SRNC and DRNC (see at least Van Figure 1 and column 2 lines 30-34, 40-43 and 53-62, where Van

further teach that a SRNC is in charge of the radio connection with the UE, and has full control of the radio connection within the RAN, and is connect to the core network, where as a DRNC supports the SRNC by supplying radio resources to the UE , thereby adding the UE into the context of service by the DRNC). Therefore, in order to notify the SRNC the service status (i.e. failed to receive PtP type services) of a UE, It would have been obvious to a person of ordinary skill in the art to modify Pirskanen, Koulakiotis and Marjelund in view of Van to send a radio link establishment failure message by the DRNC to the SRNC for further processing.

11. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pirskanen in view of Shah, and further in view of US 20040266447 A1 Terry (hereinafter Terry), and further in view of Van.

Regarding **claim 16** (previously presented), Pirskanen as modified by Shah discloses the limitations as shown in the rejection of **claim 1**. Pirskanen is silent as to *keeping the UE in CELL_FACH state and sending a Common Transport Channel Resource Initialization message to the DRNC by the SRNC if the Iur interface exists and the SRNC knows that the destination cell under the DRNC uses PtM as the channel type of the MBMS*.

In a related field of endeavor, Terry teaches that PtM services are carried out on a FACH channel (thus, a UE receiving data is kept in CELL_FACH state). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen in view Terry in to keep the UE in CELL_FACH state in order to facilitate the PtM type service.

Additionally, Van discloses a *Common Transport Channel Resource Initialization* procedure between a SRNC and a DRNC having a Iur interface (see at least Van Figure 1 and column 2 lines 30-34, 40-43 and 53-62). Van further teaches that the *Common Transport Channel Resource Initialization* procedure is carried out when a UE moves into a cell under DRNC, and the UE is to use common channel (i.e. FACH channel as taught by Terry) in the new cell (see at least Van column 5 lines 4-25). It would have been obvious to a person of ordinary skill in the art to modify Pirskanen and Terry in view of Van in order to facilitate PTM type services in the situation where a UE is served by a DRNC controlled by a SRNC.

Response to Arguments

12. Applicant's arguments with respect to claim 1 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YU (Andy) GU whose telephone number is (571)270-7233. The examiner can normally be reached on Mon-Thur 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester G. Kincaid can be reached on 5712727922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YU (Andy) GU/
Examiner, Art Unit 2617

/LESTER KINCAID/
Supervisory Patent Examiner, Art Unit 2617